



Internet Association

Re: *Restoring Internet Freedom*, WC Docket No. 17-108

The following is a response to *Policy Perspective No. 17-09* and *Policy Perspective No. 17-10* published by the Phoenix Center for Advanced Legal & Economic Public Policy Studies

It is unfortunate that the Phoenix Center has chosen to bring unfounded claims into the net neutrality policy debate; Internet Association believes these are simply counterproductive. Anyone who considers net neutrality an important topic – from either a perspective of support or opposition – should seek a higher level of debate.

Internet Association entered its response to the FCC call for public comment on July 17, 2017. The comments and our supplementary economic analysis of telecommunications infrastructure investment can be found via the links below.¹ IA encourages you to read these both, particularly because the economic analysis is one of only two comprehensive empirical assessments of telecom investment submitted to the public comments (the other is from Free Press). Furthermore, it provides the only econometric analysis of recorded data for telecom investment in 2016.

In this report, IA examined fifteen individual metrics for telecom investment and its corollaries in approximately twenty statistical and econometric tests along with variations for each. All of our data and methods are clearly documented and cited as is the overall theoretical rationale for these in our conceptual framework. In just two of those tests did Internet Association create forecasts – this was for a single metric for two using a standard, accepted approach in time series analysis and it was clearly documented in the text. Furthermore, we clearly noted such an approach is flawed and that is indeed one of the primary motivators for our dozens of other tests.

More generally, the critiques of the Center perfectly highlight the flawed process and unreasonable expectations being pursued by the FCC. Any attempt to isolate and quantify direct causal impacts from the 2015 net neutrality rules is so marred by a lack of data, missing observations, a lack of data for appropriate controls, and insufficient counterfactuals that it is essentially a pointless exercise this soon after the ruling. This is the overall conclusion and argument of Internet Association's economic work – at no point do we claim to find evidence of causal impact (in either direction) and we painstakingly highlight the shortcomings of every test precisely to illustrate this. The fact that sophisticated impact and cost-benefit analyses (something yet to be produced by any major stakeholder, IA included) were being sought in such a compressed timeframe only serves to highlight the challenges.

The FCC should allow time for evidence to develop rather than arbitrarily revisiting the rules so quickly. Serious researchers and organizations should temper their claims about net neutrality

¹ <https://cdn1.internetassociation.org/wp-content/uploads/2017/08/IA-Net-Neutrality-Reply-Comments-Docket-17-108.pdf>
<https://internetassociation.org/reports/an-empirical-investigation-of-the-impacts-of-net-neutrality/>



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according to the data. Stakeholders on all sides should take care to thoroughly read FCC filings rather than simply accepting as truth any submission that includes an equation or chart.

Regards,
Internet Association



Summary

While there are dozens of issues with and misrepresentations in Phoenix Center's recent attacks on Internet Association's net neutrality work (which we address point-by-point later in this document), there are three obvious items which IA can point out to illustrate that the Phoenix Center's critiques (if they can even be called that) are, writ large, baseless.

First, the primary purpose of their first report the Center is to criticize IA's use of a specific technique (a linear forecast). However, the Center carelessly cites multiple reports of their own in which they use the same technique for the same purpose. Furthermore, they misrepresent IA's use that technique by failing to recognize a) IA's dozens of other analyses and b) IA's explicit assertion that the technique in question is flawed and should not be considered on its own. The purpose of using the technique in question was thoroughness, not argumentation.

Second, the primary purpose of the Center's second report is to conduct a 'replication' of IA's net neutrality work. However, the Center makes mistakes that illustrate they failed to replicate the methods correctly. First, the Center does not use the same treatment method - they opt to drop 2010 from observation rather than follow IA's approach of running multiple regression specifications using systematic variation including the use of 1-year lag. Second, the Center unexplainably replicates IA's baseline regressions rather than the more rigorous specifications that include controls, fixed effects, time lags, etc. This is likely due to the facts that a) the more robust specifications would have required significant amounts of additional work to collect control variables and b) the Center was not interested in verifying IA's results.

More broadly, Internet Association respectfully points out that the Center has failed to understand the overarching conclusion of its economics work: given the recentness of the net neutrality Title II ruling in 2015, the complexities of isolating causal policy impacts, and the overall lack of data from which to draw, it is essentially impossible to claim impacts from net neutrality rules. Internet Association used dozens of individual metrics and economic tests (and variations on those tests) and was unable to find any statistical evidence. Indeed, we make no claims of positive investment impacts as a result of Title II and we explicitly and repeatedly point out the flaws in all our tests and data when they are present.



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A response to Policy Perspective No. 17-09

It is not Internet Association's general practice to devote valuable time to attacks, but given the seriousness of the Center's allegations, IA offers the following point-by-point response. However, rather than reading this current response and the comments that prompted it, IA would rather you use your time more wisely and simply read IA's FCC filing. Perhaps the suggestion is most poignantly illustrated by the fact that the Center and the report's author ironically cite their own use of forecast data to conduct impact evaluation (the primary basis of their attacks) within their piece.

Internet Association strongly requests that the center revise this report to remove the personal nature of its attacks and to temper its serious allegations. Internet Association expects and can handle a spirited debate, but baseless allegations and personalized attacks have no place in that debate

In the interim, IA offers the following responses:

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- 1) *"While Dr. Hooton's analysis is fatally flawed (as he admits), his work is important in a few respects."*
 - a) This is in reference to a footnote on page 11 of the report and is taken out of context. The footnote is in reference to just two out of twenty analyses conducted in the paper – the only two that use IA forecasts. The footnote cautions against using any single analytical test (from IA or anyone else), given the complexity of causal impact inference. The report suggests examining the full body of empirical work.
 - b) The full footnote is: "The use of forecasted data for impact evaluations is a flawed approach and is included here as a matter of due diligence. As noted, the primary focus of the paper is the 2010 treatment year and impacts calculated from any study for 2015 impacts should be interpreted cautiously given the inherent lag of infrastructure investment decisions and policy reactions (since they are planned in advance). Rather than claiming that any single analysis proves NN policy impact (such as other reports have done), this paper utilizes a series of tests that approaches the question with numerous variations to build a more robust and accurate picture. The burden in this instance falls on critics of NN to demonstrate negative investment impacts – a very difficult methodological feat.
- 2) *"First, Dr. Hooton's paper affirms the necessity of using a counterfactual analysis to assess the investment effects of Net Neutrality."*
 - a) IA's report notes that statistical significance cannot be determined from analyses that only use descriptive analysis. It does not completely dismiss them, but again emphasizes that the full body of empirical work should be considered as a whole.
- 3) *"Second, Dr. Hooton concurs with my choice of 2010 as a proper treatment date for studying Net Neutrality, stating that the 2010 treatment date is a more accurate implementation year," a choice other proponents of Net Neutrality have criticized."*



- a) Again, the report takes a quote out of context. This is in reference to a footnote on page 14 (extending into page 15) on the merits of a 2010 treatment year versus a 2015 treatment year. The footnote mentions the fact that all of its analysis tests using a 2010 treatment year uses only observed data (this is referring to the six econometric tests that were conducted for the 2010 treatment year).
- b) The full footnote is: “It should be noted, however, that the paper argues 2010 treatment date is a more accurate implementation year given that it led firms to operate under NN assumptions and that the 2015 ruling reaffirmed the already existing practices. Furthermore, regressions using the 2010 treatment date use only observed data and no forecasts – a key weakness in any analysis that relies solely on 2015 as its trigger year. Again, 2015 is analyzed here as a matter of due diligence and since other groups claim the year as critical for infrastructure investment decisions.”
- 4) *“That said, Dr. Hooton’s empirical work suffers from a number of fatal and sometimes shocking defects, including making up a significant part of his data (though he concedes this aspect of his work is “a flawed approach”). Unfortunately, all his counterfactual analysis is infected with fabricated data, leaving mostly a cursory analysis as meager as the work advanced earlier in the Net Neutrality debate.”*
 - a) This is misleading. As noted, out of twenty tests, only two used IA forecasted data. All methods and data sources are clearly documented.

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- 5) *“While Dr. Hooton appears to believe a finding of “no effect” is good news for Net Neutrality, it is, in contrast, an indictment of policies ostensibly intended to spur increased broadband deployment via the Commission’s “virtuous circle” theory of investment.”*
 - a) IA’s economic report was in direct response to the FCC’s call for empirical analysis on whether the 2015 net neutrality rules had an effect on ISP investment in telecommunications infrastructure. The Commissioner and others have claimed that ISP investment has gone down as a result of net neutrality; based on our analysis, we can find no evidence to support this claim.
- 6) *“That said, I have conducted econometric work on broadband speeds and employment, both of which reveal sizeable negative effects on these outcomes from the FCC’s regulatory revival.”*
 - a) First, the referenced report uses forecast data to conduct impact evaluations. By the center’s own argumentation, such analysis is ‘fabricated and meaningless’ – this is ironic considering the whole basis for the critique of IA’s work is based on the use of forecast data in two out of twenty tests.
 - b) Second, the referenced report contradicts telecom industry reported data provided by the Internet & Television Association, which shows broadband speed doubled in between 2014 and 2016 (see: <https://www.ncta.com/industry-data/item/3211>)
 - c) Third, the center’s claimed findings on broadband are plainly unreliable since he uses a linear forecast model in the referenced report rather than an exponential model – this is crucial considering broadband speeds have gone up exponentially (and not linearly) over the past ten years.



- 7) *“The BEA data I used in my study, which is a rich dataset on investment activity in the U.S., ends in 2015. Thus, it is impossible to consider a 2015 treatment date.”*
 - a) There are data reported directly from the telecom/ISP industry that includes 2016 observations; the center ignores these data. IA’s own report conducts analysis using these data reported for 2016.
- 8) *“In his paper, he states that the “2010 treatment date is a more accurate implementation year,” and observes, “any study for 2015 impacts should be interpreted cautiously given the inherent lag of infrastructure investment decisions and policy reactions.”*
 - a) The center misquotes, taking words out of context from a footnote on page 11 of IA’s report.
 - b) The full footnote is: “It should be noted, however, that the paper argues 2010 treatment date is a more accurate implementation year given that it led firms to operate under NN assumptions and that the 2015 ruling reaffirmed the already existing practices. Furthermore, regressions using the 2010 treatment date use only observed data and no forecasts – a key weakness in any analysis that relies solely on 2015 as its trigger year. Again, 2015 is analyzed here as a matter of due diligence and since other groups claim the year as critical for infrastructure investment decisions.”
- 9) *“His own analysis of the 2015 treatment date relies entirely on projected and not actual investment data.”*
 - a) This is dishonest. Two tests out of twenty uses forecast data and in other tests we conduct econometric analysis using recorded data for 2016. Please refer to the references in IA’s report.

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- 10) *“As is common, my regression model includes both time and sector fixed effects, both of which account for a host other factors that may influence capital spending. Fixed effects regression is the standard empirical tool to address such concerns.”*
 - a) Fixed effects (for time units or sectors) are terms included to control for any unobservable factors not captured in a model. However, they are not a substitute for actual control terms and the use of only fixed effects is insufficient for modern-day economic analysis. The center includes no specific control terms and falsely believes that the report can only use fixed effects in their place. This is particularly true for impact evaluations, which must isolate out the specific effects of a policy.
- 11) *“In fact, the period fixed effects capture the effects of broad economic dynamics like interest rates, Gross Domestic Product, and other factors that are common to telecommunications and the control sectors.”*
 - a) See comment 10a.
- 12) *“Finally, my controls followed similar investment trends to the telecommunications sector in the pre-treatment period, which implies the telecommunications and control sectors respond similarly to changes in broader economic activity.”*



- a) General correlations mean nothing for impact evaluation or most econometric modeling generally. There are countless examples of spurious correlations. See <http://www.tylervigen.com/spurious-correlations> for a few humorous and morose examples.
 - b) What is missing is any foundation in theory for the control selections of the center's paper. You cannot simply choose something that correlates with your variable of interest; you must choose something that has some theoretical rationale for why it is an appropriate comparator to your variable of interest. See comments 13 and 14 below for further discussion.
- 13) *"Consequently, I looked to other industry sectors not affected by the regulation for controls, choosing only those sectors whose trends in investment activity paralleled that of the telecommunications sectors in the quarter- century prior to the treatment."*
- a) This is flawed approach. The report used US data for (A) machinery manufacturing; (B) computer and electronic products manufacturing; (C) plastic and rubber products manufacturing; and (D) transportation and warehousing, claiming these were appropriate and unaffected by net neutrality.
 - i) A preferable approach is to examine how investment behaved post-net neutrality implementation in jurisdictions that were not affected by the policy/law (such as other OECD countries where the rules did not go into effect).
 - ii) It is poor logic to claim that something like *plastics and rubber products* are completely isolated and unaffected by broadband infrastructure investment. Perhaps the author is unaware that cable wires may be coated in rubber or plastic derivatives or that steel, copper, and other materials must be shipped to installation points; just to name a couple.
- 14) *"My control group was assessing using another recommended approach from the literature. As detailed in the paper, the telecommunications and control sectors had no statistically-significant difference in outcomes prior to the treatment, using the pseudo-treatment period 2005-2009.¹⁹ This test, along with the analysis of pre-treatment trends, offers solid evidence on the validity of the control group."*
- a) This is the equivalent of saying that it is appropriate to use growth of bananas as a control group to test the effectiveness of a new fertilizer designed specifically for apples simply because they are both fruits and both trees are in the same lawn. The appropriate counterfactual would be to have one apple tree planted in the lawn where the fertilizer is applied and compare it another apple tree in the neighbor's lawn.

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- 15) *"Also, in my study, investment is measured for U.S. economic sectors only, which I consider an advantage."*
- a) This is fundamentally incorrect – in impact evaluations you must assess differences between an affected group and an unaffected group. If a counterfactual is also exposed to the treatment (aka the policy), then you cannot ensure they have not been affected in some manner. Given that the control groups reside within the affected jurisdiction (aka the USA), they are clearly not isolated from potential effects – either primary or



secondary effects. The two groups should be from different jurisdictions, such as in IA's approach.

- 16) *"First, inter-country variations may introduce all sorts of complications, including the 'other regulations, incentives, or business cycles' mentioned by Dr. Hooton"*
 - a) This is why control terms are included in impact evaluations and not simply fixed effects
- 17) *"Second, the data is quite limited (ending in 2013)."*
 - a) IA examines four unique metrics specifically for telecom infrastructure investment in over ten different analyses. Three of these analyses used the data ending in 2013 and only two used forecast data. Please see IA's report for documentation of data sources and methods.
- 18) *"Third, the investment trends of individual OECD member states sometimes vary widely from year to year and, with few possible exceptions, would not satisfy the parallel paths assumption."*
 - a) This is because infrastructure investment is cyclical and can vary widely from year to year. However, the report uses a vector of control terms along with fixed effects and model adjustments to account for these. Please refer to IA's report for methodology.
- 19) *"Fourth, OECD membership changes over time, making the reported aggregate investment level unusable. In light of these concerns, the use of international data was dismissed."*
 - a) IA used data and countries consistently throughout the analysis – we did not add in and drop out countries. Accounting for such 'add-ins' and 'drop-outs' is a basic concept and requirement for any data analysis.

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- 20) *"Put simply, Dr. Hooton has simply made his data up."*
 - a) This is dishonest. All data are documented by the report and cited appropriately.
- 21) *"In fact, these projections, possibly from multiple sources, account for 70% of his investment data during the treatment period (7 of 10 years)."*
 - a) This statement is dishonest. Again, IA used projections for only one metric in two tests out of twenty. This claim ignores the fact that that same metric was analyzed using only observed data for a 2010 treatment over multiple tests and that the Center has used the same approach itself.
- 22) *"The impacts of the errors on the results are difficult to quantify given that replication, and often interpretation, of the analysis is precluded by Dr. Hooton's vague description and poor documentation of his empirical work."*
 - a) The report documents every method, data metric, and data source. All sources are given in full.
- 23) *"He lists, for instance, five separate data sources for his DiD analysis yet provides no clear description as to how the data is combined."*



- a) IA uses data produced by the telecom industry itself and gives full citations. IA did not combine data sources – these data were already combined by the telecom industry. Please refer to the data sources referenced in IA's report.
- 24) *"This lack of detail is a problem given that the addition or subtraction of even one country might dramatically alter the results."*
 - a) This comment demonstrates a misunderstanding of IA's methodology and econometric techniques for evaluation more broadly. Please see comment 19.
- 25) *"Perhaps most importantly, Dr. Horton fails to address the parallel paths assumption at all."*
 - a) Internet Association does not employ a Dr. Horton.
 - b) Please see the methodology discussions in IA's report.
 - c) IA directly addresses parallel paths assumption in all of its difference-in-difference tests, including in its use of a synthetic control, which is the same technique employed by the center (see Figure 3 in IA's report). More generally, simply peppering methodological buzzwords in a paper does not make a methodology correct – the center fails to understand that parallel paths one of several key elements in policy evaluation. Rather than repeating the term, the center should return to its methodology and address the other elements.

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- 26) *"Since it is unclear what data he has used or how he has combined it, I am unable to evaluate the plausibility of parallel paths."*
 - a) Please see the ample citations and references provided in IA's report.
- 27) *"Only Tables B1 and B2 are relevant, since the remainder of the tables summarize means difference test."*
 - a) This statement is inaccurate and dishonest. Please refer to any intermediate econometrics textbook.
- 28) *"I also note that the regression tables are difficult to link to the description of the analysis in the text."*
 - a) Please refer to any econometrics textbook for an explanation of how to interpret regression tables.
- 29) *"Tables B1 and B2 summarize the DiD regressions. Since the results are based largely on projections of investment data during the treatment period, they are meaningless."*
 - a) Table B1 uses only observed data with a 2010 treatment year.
- 30) *"Note that with a 2010 treatment data, the DiD estimator reported in Table B1 is negatively signed, though statistically insignificant."*
 - a) This comment is dishonest and misleading. Statistical significance is the entire motivation for running statistical tests. Statistically insignificant results are indistinguishable from zero. Please refer to any introductory econometric textbook.



- 31) *“With a 2015 treatment date, the sign on the estimator switches to positive, but all the treatment-period data in this regression are projections and not actual investment levels.”*
- a) This statement is misleading and ignores the rest of the analytical tests conducted by IA’s paper including the synthetic control test, which is the same technique used by Ford, the numerous tests conducted with 2010 treatment dates, and the other 2015 tests conducted using observed data.

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- 32) *“There is no indication the data was adjusted for inflation and it appears (from Figure 2) that the capital stock may be calculated (for the most part) using a deterministic linear trend. So, the results are meaningless on a variety of grounds.”*
- a) Please review the center’s own use of linear forecast trends to conduct impact evaluations in other reports.
 - b) IA explicitly notes such analysis tests are flawed and conducts dozens of others to supplement. The Center makes no such notes in its own use of this technique.
- 33) *“Given that, and since the model is simply a means difference calculation, the results are meaningless in terms of a policy effect.”*
- a) This statement, while misleading given the context in which it is used, perfectly captures the entire point of IA’s analysis. There are no detectable effects on telecom infrastructure investment as a result of the 2015 net neutrality ruling. This same result is shown across numerous metrics, analytical approaches, and robustness checks.
- 34) *“Unless Dr. Hooton has mislabeled the data, this regression is utterly pointless.”*
- a) As is stated in IA’s report, we examined over a dozen of metrics of investment and potential secondary (or corollary) factors. This included two tests of total investment – this is obviously not telecom investment, but the story for total inland investment mirrors that for telecom infrastructure investment specifically.
- 35) *“Given the weaknesses of the regression analysis overall, I have little reason to think this “causal impact” analysis was conducted properly. In any case, the figures are uninterpreted and uninterpretable with the information provided.”*
- a) As is clearly shown through the point by point rebuttal presented here, the econometric work of IA is not ‘weak’. This statement does, however, highlight the extreme difficulty and overwhelming unlikelihood of finding significant results in this process (such as the Center claims to do).
 - b) Regarding the CausalImpact package analysis – this was a robustness test, was discussed/interpreted in IAs report (see page 15 and Appendix C), and provided yet another set of results showing that there were no impacts from the 2015 or 2010 net neutrality rules. IA suggests that the center take more care to read works before criticizing them. Further, IA suggests that the center better familiarize themselves with R language and packages to assist in interpretation of results.
- 36) *“In all, the empirical analyses offered by Dr. Hooton are poorly considered, weakly documented, and improperly implemented. Consequently, none of the reported results are*



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meaningful or policy-relevant.”

- a) The work of IA was meticulous, comprehensive, and peer-reviewed by leading economists. It made no unsubstantiated claims, carefully documented data sources, and was systematic in reaching its conclusions. IA respects valid criticism of its work; the Center’s critiques are nothing more than attempts by organization on the other side of an issue to discredit its opponent rather than engaging in a professional debate.

37) *“A Chinese proverb states, “the man who removes mountains begins by carrying away small stones.”*

- a) A Buddhist proverb from Seng-ts’an states, ‘Do not seek the truth; only cease to cherish opinions.’ IA trusts anyone who actually reads IA’s analysis of net neutrality will recognize its objectivity and rigor.



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A response to Phoenix Center Policy Perspective No. 17-10

It has become clear that Phoenix Center and its Chief Economist, the author of two recent attack pieces against Internet Association, have become angered about something. We can think of no other reason why Internet Association's four-and-a-half-line methodological critique of some of the Center's work would elicit nearly 140 personal name attacks, over 20 pages of response, and 2 separate reports in which they use frankly defamatory language.

However, Internet Association recognizes that the anger of the Center is likely due to a simple misunderstanding stemming from a cursory reading of Internet Association's economics white paper focused on the issue of net neutrality. This work and our full net neutrality filing can be found via the links below.²

Furthermore, we do not blame the Center and its research center for their mistakes and argue the FCC filing process has been too rushed to allow proper time for filing and review of filings by stakeholders – this is indeed reflected by the fact that the only econometric work estimating economic impacts from any major stakeholder appears to come from Internet Association as we document in our formal reply submission.

There are three obvious reasons for Internet Association's assertion that the Center has simply been too rushed in their work and failed to fully understand the comprehensive set of methodologies and tests conducted by Internet Association.³

First, the Center has only critiqued a handful of IA's dozens of economic analyses. A clear sign that either have not had time to fully review IA's report or are not considering the report in its entirety.

Second, the Center and the reports' author critique one of dozens of IA analyses as fabrication – yet, in those reports, the Center's author cites his own previous works in which he uses exactly the same the methodology (a linear forecast) to estimate impacts. The author clearly believes the methodology is robust considering his own use of it – though, IA argues that the author heed IA's caution against claiming any causal impacts from it and suggest he revisit any policy conclusions he has reached in previous work based on the approach.⁴

Third, in the Center's second report offering a 'replication',⁵ the Center's author simply makes mistakes in his work – two in particular are quite clear, though IA suspects many more are present. First, he mistakenly drops the first year of policy treatment (2010) in his analysis instead

² <https://cdn1.internetassociation.org/wp-content/uploads/2017/08/IA-Net-Neutrality-Reply-Comments-Docket-17-108.pdf>

<https://internetassociation.org/reports/an-empirical-investigation-of-the-impacts-of-net-neutrality/>

³ Indeed, we would never claim that our Chief Economist is succinct in IA's economic work.

⁴ It is curious why the Center's author fails to point out the weakness of that particular methodology and instead uses it as unassailable fact in his own work while simultaneously failing to acknowledge IA's dozens of other analyses, which stem from an explicit recognition by IA of the weakness of the technique in question.

⁵ A replication study is one in which the exact test is re-run using the same data and methodology to confirm results.



of following IA's actual method, which does not drop that year.⁶ Second, the Center repeatedly makes the mistake of replicating IA's baseline regressions rather than the more rigorous specifications that include controls, fixed effects, time lags, etc. Internet Association can only assume that the Center made the mistake given the rushed timeframe of the FCC's process. Internet Association does indeed stand by its analysis and argues that using full regression specifications that include controls, fixed effects, robust standard errors, and systematic variation is a far more comprehensive and superior approach than using baseline tests, but we are happy to debate methodology in a civilized manner.

More broadly, Internet Association respectfully points out that the Center has failed to understand the overarching conclusion of its economics work: given the recentness of the net neutrality Title II ruling in 2015, the complexities of isolating causal policy impacts, and the overall lack of data from which to draw, it is essentially impossible to claim impacts from net neutrality rules in either direction. Internet Association used dozens of individual metrics and economic tests (and variations on those tests) and was unable to find any statistical evidence. Indeed, we make no claims of positive investment impacts as a result of Title II and we explicitly and repeatedly point out the flaws in all our tests and data when they are present. Furthermore, we have gone back to address flaws in one particular test of our own analysis and have included it later in this response.

Internet Association would have happily clarified any of these points had the Center simply reached out to us and IA has painstakingly gone through, point-by-point, on the Center's first report to point out its mistakes. It is now, however, time to move on.

In closing, Internet Association has two requests.

First, it strongly urges and requests that Phoenix Center revise its reports (No. 17-09 and 17-10) to remove the misleading implication of fabrication and dishonesty and to remove the nearly 140 uncalled-for uses of our Chief Economist's name. Methodology disagreements and even organizational attacks are expected, but the Center's language is unfortunate.

Second, Internet Association requests that all individuals take time to fully read through the economic analyses submitted to the FCC. This includes checking references/citations, reviewing methods, and considering the whole body of evidence rather than selective pieces of it. Any organization that claims a single test is conclusive is offering nothing more than snake oil.

Revised analysis on Cable Capital Infrastructure Investment, data from SNL Kagan via The Internet & Television Association (NCTA), online, available at: <https://www.ncta.com/industry-data/item/3199>

⁶ IA instead runs six iterations of the regression in question (one of several regression tests) – one baseline calibration test, one using a standard model with controls and fixed effects, and one using a standard model, fixed effects, and a one-year treatment lag; each of these then repeated using robust standard errors.



In its report “An Empirical Investigation of the Impacts of Net Neutrality” Internet Association used data on cable capital infrastructure investment sourced from the NCTA to conduct a regression analysis as a robustness check. This test used the five data points from the above source without alteration and matched the source graph’s representation of year-by-year investment using interpolation between those five points. It has since come to IA’s attention that the graph was showing cumulative investment and not year-by-year investment despite the source graph’s plotting of year-by-year investment amounts (albeit without labeled amounts for every year). That discrepancy, consequently, makes IA’s analysis presented in Table B3 of its report invalid.

To address this issue, IA returned to the data and calculated average investment for each year using the documented cumulative amounts and re-ran the illustrative analysis. The revised analysis reinforces the broader conclusion of IA’s previous paper. There is no statistical evidence of a decline in investment as a result of net neutrality. The difficulty of making any such claim is well-known given the small number of observations available to draw upon and the numerous factors to control for. Internet Association re-runs its previous analysis with the previous figures and reaches the same conclusion – you cannot draw any statistically significant relationship between the 2015 net neutrality ruling and infrastructure investment. Additionally, we respectfully request that NCTA revise their graph to more accurately represent its data according to research visualization standards by removing the year-by-year volume bars.

Net Neutrality Effects on Cable Infrastructure Investment (robustness check - revised)			
	Dependent: Cable Infrastructure Investment		
	Baseline - Raw SE (1)	Baseline - Robust SE (2)	Controls - Raw SE (3)
Constant	2.4540** (0.0480)	3.8695*** (0.8104)	3.8695*** (0.8104)
Treatment	0.0988 (0.2201)	-0.0492 (0.1643)	-0.0492 (0.1643)
GDP Growth Pct		-0.0277 (0.0226)	-0.0277 (0.0226)
Population Growth Pct		-1.4643** (0.6093)	-1.4643** (0.6093)
Total Infrastructure Investment (per capita)		-0.0003 (0.0021)	-0.0003 (0.0021)
Average Annual Interest Rate		0.0349 (0.0346)	0.0349 (0.0346)
Observations	21	21	21
R ²	0.0105	0.6289	0.6289
Adjusted R ²	-0.0416	0.5052	0.5052
Residual Std. Error	0.2148 (df = 19)	0.1480 (df = 15)	0.1480 (df = 15)
F Statistic	0.2015 (df = 1; 19)	5.0835*** (df = 5; 15)	5.0835*** (df = 5; 15)
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01			